UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,631	12/18/2000	Christopher Patrick	QCPA990347	5613

23696 7590 01/29/2004

Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
San Diego, CA 92121-1714

EXAMINER	
LIU, SHUWANG	

ART UNIT	PAPER NUMBER
2634	9

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/741,631	PATRICK, CHRISTOPHER	
	Examiner	Art Unit	
	Shuwang Liu	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10-15,17-21,23 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10-15,17-21,23 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claim 2 (original) have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 8, 10-13, 15, 17-19, 21 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Tomlinson, Jr. et al. (US 6,298,229).

As shown in figures 1-4, Tomlinson, Jr. et al. discloses:

(1) regarding claims 1 and 8:

a method comprising:

determining a code phase of each among a plurality of received signals, wherein said received signals are GPS (column 4, lines 20-27); and

transmitting a time difference between the code phases of at least one pair among the plurality of received signals (figure 1 and column 4, lines 20-41).

(2) regarding claims 15, 21 and 23:

An apparatus comprising:

a receiver (figure 1) configured to receive a plurality of signals;

a correlator (14) configured to determine a code phase for each among the plurality of received signals (column 4, lines 20-27); and

a transmitter (10) configured to transmit a time difference between the code phases of at least one pair among the plurality of received signals (figure 1 and column 4, lines 20-41).

(3) regarding claims 3, 10 and 17:

wherein each among the plurality of received signals has a corresponding periodic code (inherent properties for GPS, column 1, line 25-44), and

wherein each among the code phases relates to a predetermined position within the corresponding periodic code (inherent properties for GPS, column 1, line 25-44).

(4) regarding claims 4, 5, 11, 12, 18 and 19:

wherein each among the plurality of received signals is based at least in part on a corresponding direct-sequence spread spectrum modulated signal (column 1, lines 25-44).

(5) regarding claims 6 and 13:

the method further comprising receiving a composite signal,

wherein each among the plurality of received signals is based at least in part on at least a portion of the composite signal (column 3, lines 57-58).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3-8, 10-15, 17-21, 23 and 24 are rejected under 35 U.S.C. 102(e) as being unpatentable over Camp et al. (US 6,070,078, see IDS, #2) in view of Tomlinson, Jr. et al. (US 6,298,229)

As shown in figures 1, 2 and 4, Camp et al. discloses:

(1) regarding claim 1:

a method comprising:

determining a code phase of each among a plurality of received signals (column 4, lines 9-14); and

transmitting information pertaining to a time relation between the code phases of at least one pair among the plurality of received signals (column 5, line 33-column 6, line 45 and claim1).

(2) regarding claim 8:

A method comprising:

determining a code phase of a first received signal (column 8, lines 14-29); and

determining a code phase of a second received signal (column 8, 30-40),

wherein the determining a code phase of a second received signal is based at

least in part on information pertaining to a time relation

between the code phase of the first received signal and the code phase of the second received signal (column 10, lines 24-33).

(3) regarding claim 15:

An apparatus comprising:

a receiver (150) configured to receive a plurality of signals;

a correlator configured to determine a code phase for each among the plurality of received signals (column 7, lines 1-26); and

a transmitter configured to transmit information pertaining to a

time relation between the code phases of at least one pair among the plurality of received signals (column 5, line 33-column 6, line 45 and claim1).

(3) regarding claim 21:

an apparatus comprising:

a receiver configured to receive a first and second signal and to receive a signal comprising information pertaining to a time relation between the code phase of the first received signal and the code phase of the second received signal (column 5, line 33-column 6, line 45 and claim 1), and

a correlator configured to determine a code phase of at least one of the first and second received signals with respect to a predetermined code and to correlate the other of the first and second received signals to the predetermined code based upon the time relationship between the first and second received signals (column 7, lines 1-26).

(4) regarding claim 24:

a system comprising:

a reference receiver (100) configured to receive signals from a plurality of space vehicles and to transmit information; and

a field receiver (150) configured to receive signals from a plurality of space vehicles and to receive the information,

wherein the reference receiver determines a reference code phase for each among at least a first one and a second one of the signals (column 8, lines 14-40), and

wherein the information pertains at least to a time relation between the reference code phases for the first one and the second one of the signals (column 8, lines 14-40), and

wherein the field receiver determines a field code phase for the first one of the signals (column 8, lines 14-40), and

wherein the field receiver determines a field code phase for the second one of the signals at least in part from the information (column 8, lines 14-40).

Camp, Jr. et al. also discloses all of the subject matter as describe above items (1)-(4) except explicitly teaching the transmitting information comprising a time difference between the code phases of at least one pair among the plurality of received signals as recited in claims 1, 8, 15, 21 and 24.

Tomlinson, Jr. et al., in the same field of endeavor, teaches a method to calculate a time difference between the code phases of at least one pair among the plurality of received signals (figure 1 and column 4, lines 20-41).

It would be desirable to have the amount of data that needs to be transmitted to a mobile station is minimized by transmission of time difference values between the code phases instead of code phases and, therefore, power is saved and ambiguity in time difference measurements is resolved (column 2, lines 35-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to adopt the time difference as taught by Tomlinson, Jr. et al. in the code shift search of Camp, Jr. et al. in order to provide an easier and quicker method to determine the location of the mobile station in the network. In doing so, the power of the mobile station is saved and the ambiguity in time difference measurements is resolved.

(5) regarding claim 3:

wherein each among the plurality of received signals has a corresponding periodic code (column 2, lines 37-43), and

wherein each among the code phases relates to a predetermined position within the corresponding periodic code (column 2, lines 37-43).

(6) regarding claim 4:

wherein each among the plurality of received signals is based at least in part on a corresponding direct-sequence spread spectrum modulated signal (column 7, lines 51-56).

(7) regarding claim 5:

wherein each among the plurality of received signals is based at least in part on a corresponding direct-sequence pseudonoise modulated signal (column 7, lines 51-56).

(8) regarding claim 6:

the method further comprising receiving a composite signal, wherein each among the plurality of received signals is based at least in part on at least a portion of the composite signal (column 3, lines 12-15).

(9) regarding claim 7:

wherein the determining a code phase of each among a plurality of received signals comprises calculating a correlation, for each among the plurality of received signals, between a corresponding code sequence and a signal based at least in part on the composite signal (column 8, lines 14-40),

wherein each among the plurality of received signals has a corresponding periodic code (column 2, lines 37-43), and

wherein each among the code phases relates to a corresponding predetermined position within the corresponding periodic code, and

wherein the code sequence relates at least in part to the corresponding periodic code (column 3, lines 12-15).

(10) regarding claim 10:

wherein the first received signal has a corresponding periodic code and the second received signal has a corresponding periodic code, and

wherein each among the code phase of the first received signal and the code phase of the second received signal relates to a corresponding predetermined position within the corresponding periodic code (column 5, line 33-column 6, line 45 and claim1).

(111) regarding claim 11:

wherein each among the first received signal and the second received signal is based at least in part on a corresponding direct-sequence spread spectrum modulated signal (column 7, lines 51-56).

(12) regarding claim 12:

wherein each among the first received signal and the second received signal is based at least in part on a corresponding direct-sequence pseudonoise modulated signal (column 7, lines 51-56).

(13) regarding claim 13:

the method further comprising receiving a composite signal,

wherein each among the first received signal and the second received signal is based at least in part on at least a portion of the composite signal (column 3, lines 12-15).

(14) regarding claim 14:

wherein the determining a code phase of a first received signal comprises calculating a correlation between a code sequence and a signal based at least in part on the composite signal (column 3, lines 12-15),

wherein the first received signal has a corresponding periodic code and the second received signal has a corresponding periodic code, and

wherein each among the code phase of the first received signal and the code phase of the second received signal relates to a corresponding predetermined position within the corresponding periodic code (column 8, lines 14-40), and

wherein the code sequence relates at least in part to the periodic code

corresponding to the first received signal (column line 33-column 6, line 45 and claim 1).

(15) regarding claim 17:

wherein each among the plurality of received signals has a corresponding periodic code (column 3, lines 12-15), and

wherein each among the code phases relates to a predetermined position within the corresponding periodic code (column 5, line 33-column 6, line 45).

(16) regarding claim 18:

wherein each among the plurality of received signals is based at least in part on a corresponding direct-sequence spread spectrum modulated signal (column 7, lines 51-56).

(17) regarding claim 19:

wherein each among the plurality of received signals is based at least in part on a corresponding direct-sequence pseudonoise modulated signal (column 7, lines 51-56).

(18) regarding claim 20:

wherein the correlator is further configured to determine a code phase for each among the plurality of received signals at least in part by calculating a correlation, for each among the plurality of received signals, between a corresponding code sequence and the plurality of received signals (column 7, lines 1-26),

wherein each among the plurality of received signals has a corresponding periodic code (column 2, lines 37-43);

wherein each among the code phases relates to a corresponding predetermined position within the corresponding periodic code, and

wherein the corresponding code sequence relates at least in part to the corresponding periodic code (column 5, line 33-column 6, line 45 and claim 1).

(19) regarding claim 23:

wherein the correlator is further configured to determine a code phase for the second received signal at least in part from the information (column 7, lines 1-26).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuwang Liu whose telephone number is (703) 308-9556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Shuwang Liu
Primary Examiner
Art Unit 2634

January 14, 2004